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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,379	06/22/2001	Peter Dannenberg	GK-GEY-1112/	7202

26418 7590 06/19/2002

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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 06/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/830,379	DANNENBERG ET AL.	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Remark

- This Office Action is in response to applicant's preliminary amendment filed on April 25, 2001, which has been entered as paper number 6.
- By this amendment, the applicant has canceled claims 1-11 and has submitted new claims 12-22.
- Claims 12-22 remain pending in this application.
- The applicant has also submitted a substituted specification however such specification is **denied for entry** since it fails to provide a Mark-Up-Version to indicate the changes being made from the original specification.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. **Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading.** If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

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- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

1. The disclosure is objected to because of the following informalities: the specification fails to include section headings as required above.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 12-13 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.**

The specification and claims fail to teach how could the light integrator, being made by assembling at least two parts, is capable of having *rimless* reflective coating of the surfaces of the two parts. It is implicitly true that each of the two parts must have edges and it is therefore *impossible* for the reflective coating on the surface to be rimless, i.e. edgeless.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 12-13 and 14-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "are exposed" recited in claims 12 and 14 is indefinite since it is not clear the element is exposed to what.

The phrase "a mirror layer" recited in claim 14 is indefinite since it is not clear how does it relate to the phrase "an inner reflective coating" recited in earlier part of the claim.

The phrase "bottom and top surface" and the phrase "outlet and inlet surfaces" recited in claim 16 are confusing and indefinite since it is not clear how do they relate *to each other* and how do they relate to the "input surface" and the "output surface" recited in its base claim. This renders the scopes of the claim unclear.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 12 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Farmiga (PN. 5,828,505).

Farmiga teaches an *optical beam-shaping uniformizer construction* and methods for producing it, wherein the construction comprises the step of integrating or assembling *at least two mirrored slabs* (11 and 12) together to form *a cavity* within wherein the inner surface forming the cavity are coated with mirror coating. The mirrored slabs are fastened to form the cavity by using fastening means such as clamping means, (please see Figures 1B, 1C, 3, 4A-4C, 5A-5C). The beam-shaper uniformizer

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construction homogenizes the light as it enters the construction cavity from an input surface and exits from an output surface.

This reference has met all the limitations of the claims with the exception that it does not teach explicitly that the mirrored surfaces are exposed before to assemble. However the specification and the claims fail to disclose to what are these surfaces being exposed to it therefore cannot be addressed here with details. It is understood in the art that the mirrored surfaces, during fabrication process of assembling the construction, are inevitably exposed to the surroundings.

With regard to claim 15, this reference however does not teach explicitly that the at least two mirrored slabs are engaged with projection and cutout however since the specification fails to teach the criticality of having this particular arrangement would overcome any problem in the prior art and such engagement is rather well known to common people such modification is therefore considered as obvious matter of design choice to one skilled in the art to provide an alternative arrangement for engaging the mirrored slabs.

8. Claims 13 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Farmiga as applied to claims 12 and 14 above, and further in view of the patent issued to Takahashi et al (PN. 5,735,793).

The optical beam-shaper-uniformizer construction taught by Farmiga as described for claims 12 and 14 above has met all the limitations of the claims. This reference teaches that the mirrored slabs are assembled and fastened by fastening means to form the desired cavity but it does not teach explicitly that the fastening means is *shrink tubing*. However using shrink tubing as a fastening means for holding two optical elements together in order to form optical cavity is very well known in the art as demonstrated by the teachings of Takahashi et al. *Takahashi et al* teaches a heat shrinking tube (300, Figure 8) that may be wrapped around the junction of a suction tube (100) and a pipe (132) so that the suction tube and the

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pipe are jointed and fastened to form the desired optical pipe with a cavity within, (please see Figure 8, column 14, lines 36-49). It would then have been obvious to one skilled in the art to apply the teachings of Takahashi et al as an alternative fastening means to fasten the mirrored slabs of Farmiga in place in order to form the uniformizer construction for the benefit of providing a fastening means with *no filth-collecting gaps* formed in the interior of the joint. With regard to the positions of applying the heat shrinking tube it would have been considered to be an obvious matters of design choice to one skilled in the art since the positions of joints therefore the positions of the tube do not effect the performance of the beam-shaper construction as along as the general geometric shape is kept.

9. Claims 16-17 and 21-22 are ^{re}~~re~~^{jected} under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Farmiga as applied to claim 14 above, and further in view of the patent issued to Levis et al (PN. 5,902,033).

The optical beam-shaper-uniformizer construction taught by Farmiga as described for claim 12 above has met all the limitations of the claims. Farmiga teaches that the construction with cavity within forms a geometric prism with various geometric shapes of inlet and outlet surfaces, (please see Figure 6). However it does not teach explicitly that the surfaces are of rectangular or square shape. *Levis et al* in the same field of endeavor teaches a light pipe integrator (15, Figure 1, 8, 9 and 10), wherein the light integrator is in the form of a geometric prism with *rectangular shape or square shape* of inlet and outlet surfaces for the benefit of providing desired beam shape to illuminate a liquid crystal display device. It would then have been obvious to one skilled in the art to apply the teachings of Levis et al to modify the beam-shaper construction of Farmiga for the benefit of providing a desired uniform beam shape.

With regard to claims 21 and 22, Farmiga does not teach explicitly to use the beam shaper construction to illuminate a matrix of image display elements. However it has been held that a recitation with respect to the manner in which a claimed apparatus *is intended to be employed* does not differentiate

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the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Madham, 2 USPQ2d 1647 (1987). Furthermore, it is rather well known in the art to use the tube typed beam shaper to illuminate matrix of image elements as demonstrated by the teachings of Levis et al wherein the *light pipe integrator* (15) is utilized to illuminate a *light modulator panel* such as *liquid crystal image display* (21) to create images, (please see Figures 1 and 2). It is well known in the art that light modulator panel such as LCD has a matrix form of image elements. It would then have been obvious to one skilled in the art to apply the teachings of Levis et al to apply the light shaper uniformizer construction of Farmiga to illuminate a light modulator panel for the benefit of providing an image projection device. Although these references do not teach explicitly that the light modulator panel is a matrix of *tilted mirrors* however such arrangement which known in the art as deformable micromirror device (DMD) is a standard image display device in the art such modification would therefore have been an obvious matter of design choice to one skilled in the art.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US patent issued to *Laakmann* et al (PN. 5,005,944) teaches a light pipe that may be formed by assembling two halves together, (please see Figure 13).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where

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this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
Art Unit 2872

A. Chang, Ph.D.
June 14, 2002

A handwritten signature in black ink, appearing to be 'Audrey Y. Chang', written in a cursive style.